

**Commonwealth of Kentucky**  
**Division for Air Quality**  
***PERMIT STATEMENT OF BASIS***

TITLE V (DRAFT) PERMIT No. V-06-027

DEGUSSA CORPORATION

CALVERT CITY, KY.

DATE: MAY 31, 2006

SUKHENDU K. MAJUMDAR, REVIEWER

SOURCE I.D. #: 21-157-00036

SOURCE AI #: 2931

ACTIVITY #: APE 20040001

Pursuant to 401 KAR 52:020 Section 4, Degussa Corporation, submitted an initial Title V permit application to the Division for Air Quality on December 14, 1998. On January 16, 2004, the permit review branch of the Division for Air Quality submitted a letter of deficiency to the source for the Title V application. The response to the deficiency letter came to the Division partly on March 22, 2004 and partly on April 12, 2004. A minor off permit change application was received by the Division on October 10, 2005 for an increase in the production rate of the Hydro De-Sulfurization (HDS) catalyst. The proposed increase in production rate to a level of 19.2 tons per day, up from permitted capacity of 17.3 tons per day. The change in the production rate for the HDS process has been included in the permit. The source is presently operating under five expired operating permits for the five processes which were issued between 1994 and 1998.

**SOURCE DESCRIPTION:**

Degussa Corporation manufactures a variety of catalyst for the chemical industries. There are five different catalyst manufacturing processes in the facility, calciners, and dryers. These are:

1. HDS and Other fixed bed catalyst - Emission Unit #1;
2. Vinyl Acetate Monomer (VAM) Series Catalyst - Emission Unit #2;
3. Bead Process - Emission Unit #3;
4. Precious Metal Catalyst (PMC) Process - Emission Unit #4;
5. Butane Diol (GEMX) Process - Emission Unit #5;
6. Calciners - Emission Unit #6; and
7. Belt and Vibrating Dryers - Emission Unit #7.

Raw material used to manufacture catalyst are: alumina, metal oxides, substrate and rare earth or precious metals. Chemicals used in the manufacturing process are: nitric acid; ammonium hydroxide; hydrazine; potassium carbonate; and a few others in small quantities. The process equipment consists of Calciner, Impregnator, Dryers and Reactors. The catalysts manufacturing in the facility is a combination of batch and continuous processes and some of the equipment are common between the five catalyst manufacturing processes.

The facility has seven (7) emission units and seven (7) emission points. Bag houses, fabric filters and wet scrubbers are used to recover the precious metals and to reduce particulate matter emissions.

The facility uses 85% efficient scrubbers (AT1072, AT1074, and AT1075) common to HDS, VAM and Bead processes to reduce NO<sub>x</sub> emissions. GEMX process has separate scrubbers (2080) for NO<sub>x</sub> emission reduction.

**COMMENTS:**

Degussa Corporation.

Federally-Enforceable permit, with synthetic minor limits, F-99-005, was issued on June 11, 1999. This permit was for Calciner 3030, which is now owned by International Catalyst Technology, Inc. (ICT). Calciner 3030 is now referred to as ICT Flash Calciner and is no longer a Degussa Corporation emission unit or part of permit, V-06-027.

Federally-Enforceable permit, with synthetic minor limits, F-98-025, was issued on November 23, 1998. This permit was for construction and operation of the GMX process. Proposed construction was to begin in 1998. The GMX process is included in the Title V permit, V-06-027, as the GEMX process and the limits from F-98-025 are included.

Description – Emission Unit # : Stack (Emission Point):

HDS Process-Emission Unit #1's emission points: Main Stack (EP01).

VAM Series-Emission Unit #2's emission points: Main Stack (EP01).

Bead Process-Emission Unit #3's emission points: Main Stack (EP01).

PMC Process-Emission Unit #4's emission points: Main Stack (EP11), Slurry Room Stack (EP15).

GEMX Process-Emission Unit #5's emission points: GEMX Process Product Recovery Exhaust (EP16), NO<sub>x</sub> Scrubber Off Gas (EP14).

Calciners- Emission Unit #6's emission points: Combustion Vents (EP02, EP13).

Belt and Vibrating Dryers- Emission Unit #7: Combustion Vents (EP02, EP13)

Type of control and efficiency:

Process Unit	Type of Control	Efficiency	Pollutant
EU #1 HDS and Other Fixed Bed Catalyst Process	AT-1072, AT-1074, AT-1075 Scrubbers East & West Baghouse	85.0% 95.0%	NO <sub>x</sub> PM10, PT
EU #2 VAM Series and Other fixed Bed Catalyst Process	East & West Baghouse AT-1072, AT-1074, AT-1075 Scrubbers	95% 85.0%	PM10, PT NO <sub>x</sub>
EU #3 Bead Process	East & West Baghouse, AT-1072, AT-1074, AT-1075 Scrubbers	95.0% 85.0%	PM10, PT NO <sub>x</sub>
EU #4 PMC Process	T-395 Wet Filters	95.0%	PM10, PT
EU #5 GEMX Process	Scrubber 2080	85.0%	NO <sub>x</sub>
EU #6 Calciners	None	0%	CO, NO <sub>x</sub> , PM10, PT, SO <sub>2</sub> , and VOC
EU #7 Belt and Vibrating Dryers	None	0%	CO, NO <sub>x</sub> , PM10, PT, SO <sub>2</sub> , and VOC

Emission factors and their source: Material Balance, AP-42 and stack test.

Applicable regulations:

401 KAR 59:010, New Process Operations, applies to the particulate matter emissions from units constructed on or after July 2, 1975, which are not subject to another emissions standard with respect to particulates in 401 KAR Chapter 59. Emission Unit #1 (HDS and other fixed bed catalyst process), Emission Unit #2 (VAM Series), and Emission Unit #3 (Bead Process) all have emissions going to the main stack (EP01) and are subject to 401 KAR 59:010, as well as Emission Unit #4 (PMC Process), Emission Unit #5 (GEMX Process), and Emission Unit #7 (Belt and Vibrating Dryers)

401 KAR 59:015, New indirect heat exchangers, applicable to affected facilities with a capacity of 250 mmBtu per hour heat input or less commenced after August 9, 1972, limits particulate and sulfur dioxide emissions and applies to Emission Unit #6 (Calciners).

Non-Applicable regulations:

KAR 51:017, Prevention of Significant Deterioration of Air Quality (PSD) - the NO<sub>x</sub> Scrubber Off Gas (EP-14) from Emission Unit #5 have limits to preclude the applicability of PSD.

**EMISSION AND OPERATING CAPS DESCRIPTION:**

The total emission of NO<sub>x</sub> from Precious Metal Vacuum Receiver (2014, 2024), Mix Tank 2 and 3 (2010 and 2020) and Blender Dryer (2030) shall not exceed 37.3 tons per year [Ref. Permit # F-98-025] in order to preclude applicability of 401 KAR 51:017 for the GEMX process.

**PERIODIC MONITORING:**

Refer to the Permit Sections B, F-1 and F-2.

**OPERATIONAL FLEXIBILITY:**

None.

**CREDIBLE EVIDENCE:**

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.